
**Electronic data interchange between
information systems in agriculture —
Agricultural data element dictionary —**

**Part 2:
Dairy farming**

*Échange de données informatisé entre systèmes d'information en
agriculture — Dictionnaire de données agricoles —*

Partie 2: Exploitation laitière



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO/IEC 11788 may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 11788-2 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 19, *Agricultural electronics*.

ISO 11788 consists of the following parts, under the general title *Electronic data interchange between information systems in agriculture — Agricultural data element dictionary*:

- *Part 1: General description*
- *Part 2: Dairy farming*
- *Part 3: Pig farming*
- *Part 4: Poultry farming*
- *Part 5: Non-animal stationary application*

Annexes A and B form a normative part of this part of ISO 11788.

Introduction

Stand-alone computers on farms require that the same data be manually entered into and collected from the different computers. This is a laborious task which becomes superfluous when the computers are interconnected and able to communicate with each other automatically to share and exchange information. Information exchange means data transport between the management computer on one side and each process computer on the other side.

An agricultural data element dictionary (ADED) consists of data elements that may be used in the agricultural sector to exchange data electronically. ADED is closely linked to agricultural data interchange syntax (ADIS). It is a syntax that may be used in the agricultural sector to exchange data electronically. ADED in combination with ADIS makes electronic data interchange possible.

In a data element dictionary all data elements are described in a unique way. Each element is uniquely identified by a data dictionary number (DD number). Data dictionaries for data exchange between management computers and process computers may be subsets of larger data dictionaries.

The standardization of on-farm data interchange between management computer and stationary process computers consists of an interchange syntax, ADIS, and an agricultural data element dictionary, ADED. The ADIS syntax is described in ISO 11787:1995, *Machinery for agriculture and forestry — Data interchange between management computer and process computers — Data interchange syntax*. A general description of ADED is given in ISO 11788-1; the other parts of ISO 11788 describe data dictionaries for different fields of application.

This part of ISO 11788 describes the agricultural data dictionary elements in the field of dairy farming.

Electronic data interchange between information systems in agriculture — Agricultural data element dictionary —

Part 2: Dairy farming

1 Scope

This part of ISO 11788 specifies how the agricultural data element dictionary (ADED) can be used in on-farm data exchange between management systems and stationary computers in dairy farming. Stationary computers in dairy farming are for example feeding computers, milk yield registrators and animal weighing computers.

This part of ISO 11788 describes the data elements and entities in the field of dairy farming in accordance with the rules given in ISO 11788-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 11788. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 11788 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 11784:1996, *Radio frequency identification of animals — Code structure*.

ISO 11788-1:1997, *Electronic data interchange between information systems in agriculture — Agricultural data element dictionary — Part 1: General description*.

3 Terms and definitions

For the purposes of this part of ISO 11788, the terms and definitions given in ISO 11788-1 and the following apply.

3.1 entity relationship diagram

visual presentation of the possible relationships between entities

4 Abbreviations

ADED: Agricultural Data Element Dictionary

ADIS: Agricultural Data Interchange Syntax

AN: Alphanumeric

- C: Conditional
- DD: Data Dictionary
- EDI: Electronic Data Interchange
- ERD: Entity Relationship Diagram
- K: Key data element
- M: Mandatory
- N: Numeric
- O: Optional
- Obl: Obligation

5 ADED dairy farming

5.1 Code sets

In this part of ISO 11788, code sets are added to the data element. When a data element has a code set, it can be a normative or an informative code set. A normative code set is specified in an International Standard; an informative code set only gives an example of possible values.

When there is agreement on the data element description, but the values of the code set differ between countries, the code set must be defined at the national level. The national code set can be found in the national data dictionary.

5.2 Entity relationship diagram

The relationship between two entity types can have the characteristics/cardinalities shown in Figure 1. The entity relationship diagram shown in Figure 2 shows the entity types (rectangles) and their relationship types (lines with certain characteristics).

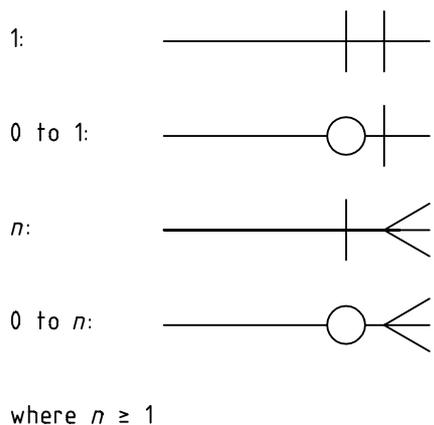


Figure 1 — Relationships between entity types

5.3 Entities

The entities for the field of dairy farming are given in annex A.

5.4 Data elements

The data elements for the field of dairy farming are given in annex B.

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Annex A (normative)

Entities

990002 Animal

In this entity the data elements describe characteristics of an animal.

O	ADED-nr	Name
K	900070	Animal number
	900033	Group number
	900034	Date entered herd
	900035	Parity
	900038	Date left herd
	900045	Animal name
	900046	Animal sex
	900053	Birth date
	900056	Electronic ISO ID number
	900080	Identification number
	900081	Left herd reason
	900082	Sire registration number
	900083	Dam identification number
	900092	Animal status
	900097	Herd-specific electronic ID number

990003 Individual milking

In this entity the data elements give information about one milking session of an animal.

O	ADED-nr	Name
K	900070	Animal number
K	900054	Date of milking session
K	900078	Time of milking session
	900024	Box number for sample bottle
	900025	Sample bottle number
	900027	Method of performance recording
	900042	Individual milk weight
	900051	Average flow rate during individual milking
	900057	Milking error flag
	900062	Maximum flow rate for individual milking
	900068	Stall or unit number for individual milking
	900079	Milking duration

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990004 Lactation

In this entity the data elements give information about the lactation period and the (calculated) production in the current lactation of an animal.

O	ADED-nr	Name
K	900070	Animal number
K	900028	Parturition date
	900021	Projected/planned date to turn dry
	900044	Date turned dry
	900058	Lactation number
	900072	Amount of protein in lactation
	900073	Amount of protein 305 days
	900074	Amount of fat in lactation
	900075	Amount of fat 305 days
	900084	Amount of milk in lactation
	900086	Days in lactation
	900087	Amount of milk 305 days
	900090	Lactation calculation method

990005 Official milk test result

In this entity the data elements describe the official results of a milk test, based on one or more individual milkings.

O	ADED-nr	Name
K	900070	Animal number
K	900032	Milk test date
	900023	Somatic cell count linear score
	900026	Urea percentage milk
	900031	Percent protein
	900047	Somatic cell count
	900048	Percent lactose
	900077	Percent fat

990006 Daily feeding

In this entity the data elements describe the daily feed for an animal during a specific feed cycle.

O	ADED-nr	Name
K	900070	Animal number
K	900067	Feed type identifier
K	900088	Feed cycle start date
	900060	24 hour feed consumption
	900061	24 hour feed allocation
	900063	24 hour feed remainder

990007 Weighing

In this entity data elements are listed for describing the result of one weighing of an animal.

O	ADED-nr	Name
K	900070	Animal number
K	900039	Date of body weight measurement
K	900050	Time of body weight measurement
	900040	Body weight

990008 In heat

In this entity data elements for describing heat detection are listed.

O	ADED-nr	Name
K	900070	Animal number
K	900055	Heat detection date
	900095	Heat detection method

990009 Insemination

In this entity data elements belonging to a specific insemination, artificial or natural, are listed.

O	ADED-nr	Name
K	900070	Animal number
K	900030	Insemination date
	900076	Registration number service sire
	900094	Insemination status
	900096	Performing insemination

990010 Pregnancy check

In this entity data elements of a pregnancy check are listed.

O	ADED-nr	Name
K	900070	Animal number
K	900059	Pregnancy check date
	900085	Pregnancy check result
	900091	Pregnancy checking person

990011 Parturition

In this entity data elements describe one parturition. In case of multiple offspring, only the values for the firstborn offspring are sent.

O	ADED-nr	Name
K	900070	Animal number
K	900028	Parturition date
	900022	Offspring survival code
	900029	Offspring number
	900036	Weight at birth
	900037	Sex of offspring
	900052	Parturition ease
	900071	Number of offspring
	900098	Identification number offspring

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Annex B (normative)

Data elements

ADED-number : 900021
 Name : Projected/planned date to turn dry
 Synonyms :
 Definition : Date the animal is planned/projected to turn dry.
 Comments :
 Format : type: N length: 8 resolution: 0 unit: ccyymmdd
 Values : code set: N min: max:
 Code set :

ADED-number : 900022
 Name : Offspring survival code
 Synonyms :
 Definition : Survival code of the first-born offspring.
 Comments :
 Format : type: AN length: 1 resolution: 0 unit:
 Values : code set: Y min: max:
 Code set : Informative:
 1 = alive after 48 hours; 2 = born alive, dead within 48 hours; 3 = dead at birth; 4 = unknown

ADED-number : 900023
 Name : Somatic cell count linear score
 Synonyms :
 Definition : Somatic cell count linear score according to the official laboratory.
 Comments :
 Format : type: N length: 2 resolution: 1 unit:
 Values : code set: N min: max:
 Code set :

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ADED-number : 900024
Name : Box number for sample bottle
Synonyms :
Definition : Number of the collection box of the milk sample bottles.
Comments :
Format : type: N length: 6 resolution: 0 unit:
Values : code set: N min: max:
Code set :

ADED-number : 900025
Name : Sample bottle number
Synonyms :
Definition : Number of the sample bottle.
Comments :
Format : type: N length: 15 resolution: 0 unit:
Values : code set: N min: max:
Code set :

ADED-number : 900026
Name : Urea fraction milk
Synonyms :
Definition : Urea fraction of the milk according to the official laboratory.
Comments :
Format : type: N length: 3 resolution: 1 unit: ppm
Values : code set: N min: max:
Code set :

ADED-number : 900027
Name : Method of performance recording
Synonyms :
Definition : Method of performance recording of the official milk test as defined by the ICAR-rules.
Comments :
Format : type: AN length: 1 resolution: 0 unit:
Values : code set: Y min: max:
Code set : Normative (ICAR-rules):
A = Recording by official representative
B = Recording by farmer
C = Recording by official representative and farmer

ADED-number : 900028
 Name : Parturition date
 Synonyms : Calving date
 Definition : Date the animal gave birth and began a new lactation.
 Comments :
 Format : type: N length: 8 resolution: 0 unit: ccyymmdd
 Values : code set: N min: max:
 Code set :

ADED-number : 900029
 Name : Offspring number
 Synonyms :
 Definition : Serial number, unique within the farm, given to the first-born offspring of the animal.
 Comments : This element is comparable with Animal number (900070).
 Format : type: N length: 6 resolution: 0 unit:
 Values : code set: N min: max:
 Code set :

ADED-number : 900030
 Name : Insemination date
 Synonyms : Service date
 Definition : Date of the insemination.
 Comments :
 Format : type: N length: 8 resolution: 0 unit: ccyymmdd
 Values : code set: N min: max:
 Code set :

ADED-number : 900031
 Name : Percent protein
 Synonyms :
 Definition : Protein percentage of the milk according to the official laboratory.
 Comments :
 Format : type: N length: 4 resolution: 2 unit: %
 Values : code set: N min: max:
 Code set :

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ADED-number : 900032
Name : Milk test date
Synonyms :
Definition : Officially recorded date of milk test.
Comments : Depending on the official recording organisation it can for example be the first or last test date.
Format : type: N length: 8 resolution: 0 unit: ccyymmdd
Values : code set: N min: max:
Code set :

ADED-number : 900033
Name : Group number
Synonyms :
Definition : Number of the group to which the animal belongs.
Comments :
Format : type: N length: 4 resolution: 0 unit:
Values : code set: N min: max:
Code set :

ADED-number : 900034
Name : Date entered herd
Synonyms : Enrolment date
Definition : Date of arrival of the animal at the farm.
Comments :
Format : type: N length: 8 resolution: 0 unit: ccyymmdd
Values : code set: N min: max:
Code set :

ADED-number : 900035
Name : Parity
Synonyms : Calving number
Definition : Number of parturitions of an animal.
Comments :
Format : type: N length: 2 resolution: 0 unit:
Values : code set: N min: max:
Code set :

ADED-number : 900036
 Name : Weight at birth
 Synonyms :
 Definition : Weight at birth of the first-born offspring.
 Comments :
 Format : type: N length: 4 resolution: 0 unit: kg
 Values : code set: N min: max:
 Code set :

ADED-number : 900037
 Name : Sex of offspring
 Synonyms :
 Definition : Sex of the first-born offspring.
 Comments :
 Format : type: AN length: 1 resolution: 0 unit:
 Values : code set: Y min: max:
 Code set : Normative:
 F = Female; M = Male

ADED-number : 900038
 Name : Date left herd
 Synonyms : Removal date
 Definition : Date of removal of the animal from the farm.
 Comments :
 Format : type: N length: 8 resolution: 0 unit: ccyymmdd
 Values : code set: N min: max:
 Code set :

ADED-number : 900039
 Name : Date of body weight measurement
 Synonyms :
 Definition : Date the animal's body weight was measured.
 Comments :
 Format : type: N length: 8 resolution: 0 unit: ccyymmdd
 Values : code set: N min: max:
 Code set :

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ADED-number : 900040
Name : Body weight
Synonyms :
Definition : Measured weight of the individual animal.
Comments :
Format : type: N length: 4 resolution: 0 unit: kg
Values : code set: N min: max:
Code set :

ADED-number : 900042
Name : Individual milk weight
Synonyms : Milk yield
Definition : Milk amount given by the animal during one milking session.
Comments :
Format : type: N length: 3 resolution: 1 unit: kg
Values : code set: N min: max:
Code set :

ADED-number : 900044
Name : Date turned dry
Synonyms :
Definition : Date the animal turned dry and ended its lactation period.
Comments :
Format : type: N length: 8 resolution: 0 unit: ccyymmdd
Values : code set: N min: max:
Code set :

ADED-number : 900045
Name : Animal name
Synonyms :
Definition : Name, unique within the farm, given to a certain animal.
Comments :
Format : type: AN length: 24 resolution: 0 unit:
Values : code set: N min: max:
Code set :

ADED-number : 900046
 Name : Animal sex
 Synonyms :
 Definition : Sex of the animal.
 Comments :
 Format : type: AN length: 1 resolution: 0 unit:
 Values : code set: Y min: max:
 Code set : Normative:
 F = Female; M = Male

ADED-number : 900047
 Name : Somatic cell count
 Synonyms :
 Definition : Number of somatic cells in thousands according to the official laboratory.
 Comments :
 Format : type: N length: 4 resolution: 0 unit:
 Values : code set: N min: max:
 Code set :

ADED-number : 900048
 Name : Percent lactose
 Synonyms :
 Definition : Percent milk sugar in the milk according to the official laboratory.
 Comments :
 Format : type: N length: 4 resolution: 2 unit: %
 Values : code set: N min: max:
 Code set :

ADED-number : 900050
 Name : Time of body weight measurement
 Synonyms :
 Definition : Time the animal's body weight was measured.
 Comments :
 Format : type: N length: 6 resolution: 0 unit: hhmmss
 Values : code set: N min: max:
 Code set :

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ADED-number : 900051
Name : Average flow rate during individual milking
Synonyms :
Definition : Average flow rate of the milk leaving the udder during a milking session.
Comments : Calculation: Individual milk weight (900042) divided by milking duration (900079).
Format : type: N length: 3 resolution: 1 unit: kg/min
Values : code set: N min: max:
Code set :

ADED-number : 900052
Name : Parturition ease
Synonyms :
Definition : Parturition ease for the mother animal.
Comments :
Format : type: AN length: 1 resolution: 0 unit:
Values : code set: Y min: max:
Code set : The code set has to be defined national.

ADED-number : 900053
Name : Birth date
Synonyms :
Definition : Date of birth of an animal.
Comments : Sometimes either the day or the month may be missing, then the birth date has to be assumed. So the value can be: real, assumed, unknown.
Format : type: N length: 8 resolution: 0 unit: ccyymmdd
Values : code set: N min: max:
Code set :

ADED-number : 900054
Name : Date of milking session
Synonyms :
Definition : Date of the milking session of the individual animal.
Comments :
Format : type: N length: 8 resolution: 0 unit: ccyymmdd
Values : code set: N min: max:
Code set :

ADED-number : 900055
 Name : Heat detection date
 Synonyms :
 Definition : Date in heat was detected.
 Comments :
 Format : type: N length: 8 resolution: 0 unit: ccymdd
 Values : code set: N min: max:
 Code set :

ADED-number : 900056
 Name : Electronic ISO ID number
 Synonyms :
 Definition : Electronic ID of the animal, in conformance with ISO 11784.
 Comments :
 Format : type: N length: 16 resolution: 0 unit:
 Values : code set: N min: max:
 Code set :

ADED-number : 900057
 Name : Milking error flag
 Synonyms :
 Definition : Milking status of an individual milking.
 Comments :
 Format : type: AN length: 1 resolution: 0 unit:
 Values : code set: Y min: max:
 Code set : Informative:
 1 = Manual ID; 2 = Calculated estimate; 3 = User entry; 4 = Repeat or other error

ADED-number : 900058
 Name : Lactation number
 Synonyms :
 Definition : Lifetime serial number of the current lactation of the animal, that started on the parturition date.
 Comments :
 Format : type: N length: 2 resolution: 0 unit:
 Values : code set: N min: max:
 Code set :

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ADED-number : 900059
Name : Pregnancy check date
Synonyms :
Definition : Check date of pregnancy of the animal.
Comments :
Format : type: N length: 8 resolution: 0 unit: ccyymmdd
Values : code set: N min: max:
Code set :

ADED-number : 900060
Name : 24 hour feed consumption
Synonyms :
Definition : Amount of feed the animal ate in the 24 hours feed cycle.
Comments :
Format : type: N length: 6 resolution: 3 unit: kg
Values : code set: N min: max:
Code set :

ADED-number : 900061
Name : 24 hour feed allocation
Synonyms :
Definition : Amount of feed allocated to the animal in the 24 hours feed cycle.
Comments :
Format : type: N length: 6 resolution: 3 unit: kg
Values : code set: N min: max:
Code set :

ADED-number : 900062
Name : Maximum flow rate for individual milking
Synonyms :
Definition : Maximum flow rate of the milk leaving the udder during a milking session.
Comments :
Format : type: N length: 3 resolution: 1 unit: kg/min
Values : code set: N min: max:
Code set :

ADED-number : 900063
 Name : 24 hour feed remainder
 Synonyms :
 Definition : Amount of feed remained in the 24 hours feed cycle.
 Comments : Can be negative.
 Format : type: N length: 6 resolution: 3 unit: kg
 Values : code set: N min: max:
 Code set :

ADED-number : 900067
 Name : Feed type identifier
 Synonyms : Number of feed type
 Definition : Farm specific serial number of the type of the feed.
 Comments :
 Format : type: N length: 2 resolution: 0 unit:
 Values : code set: N min: max:
 Code set :

ADED-number : 900068
 Name : Stall or unit number for individual milking
 Synonyms : Number of milking box
 Definition : Serial number, unique within the farm, of the milking unit of a parlour.
 Comments : There may be more than one milking parlour on the farm.
 Format : type: N length: 4 resolution: 0 unit:
 Values : code set: N min: max:
 Code set :

ADED-number : 900070
 Name : Animal number
 Synonyms :
 Definition : Serial number, unique within the farm, given to a certain animal.
 Comments :
 Format : type: N length: 6 resolution: 0 unit:
 Values : code set: N min: max:
 Code set :

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ADED-number : 900071
Name : Number of offspring
Synonyms :
Definition : Number of offspring born in this parturition, both dead and alive.
Comments :
Format : type: N length: 1 resolution: 0 unit:
Values : code set: N min: max:
Code set :

ADED-number : 900072
Name : Amount of protein in lactation
Synonyms :
Definition : Amount of protein in the milk of an animal in the current lactation.
Comments : Calculation depends on the Lactation calculation method (900090).
Format : type: N length: 6 resolution: 2 unit: kg
Values : code set: N min: max:
Code set :

ADED-number : 900073
Name : Amount of protein 305 days
Synonyms :
Definition : Amount of protein in the milk of an animal in 305 days.
Comments : Calculation depends on the Lactation calculation method (900090).
Format : type: N length: 6 resolution: 2 unit: kg
Values : code set: N min: max:
Code set :

ADED-number : 900074
Name : Amount of fat in lactation
Synonyms :
Definition : Amount of fat in the milk of an animal in the current lactation.
Comments : Calculation depends on the Lactation calculation method (900090).
Format : type: N length: 6 resolution: 2 unit: kg
Values : code set: N min: max:
Code set :

ADED-number : 900075
 Name : Amount of fat 305 days
 Synonyms :
 Definition : Amount of fat in the milk of an animal in 305 days.
 Comments : Calculation depends on the Lactation calculation method (900090).
 Format : type: N length: 6 resolution: 2 unit: kg
 Values : code set: N min: max:
 Code set :

ADED-number : 900076
 Name : Registration number service sire
 Synonyms :
 Definition : Identification number of the service sire.
 Comments : Number can be identification number, herd association number or farm specific number.
 Format : type: AN length: 16 resolution: 0 unit:
 Values : code set: N min: max:
 Code set :

ADED-number : 900077
 Name : Percent fat
 Synonyms :
 Definition : Fat percentage of the milk, according to the official laboratory.
 Comments :
 Format : type: N length: 4 resolution: 2 unit: %
 Values : code set: N min: max:
 Code set :

ADED-number : 900078
 Name : Time of milking session
 Synonyms :
 Definition : Time of a milking session of the individual animal.
 Comments : The time can be the average, the start or the ending time, depending on the system.
 Format : type: N length: 6 resolution: 0 unit: hhmmss
 Values : code set: N min: max:
 Code set :